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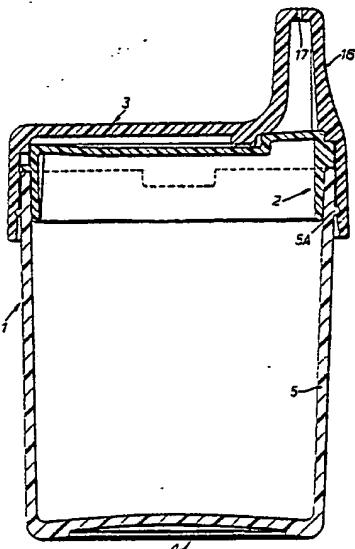
## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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(54) Title: DRINKING VESSEL

## (57) Abstract

Liquid dispensers, in particular feeder cups. Such a cup comprises a liquid container (1), an orifice plate (2) and a swivel lid (3). Rotation of the lid (3) opens or closes an outlet hole (9) in the plate (2) and hence controls the flow of liquid between the container (1) and the spout (16) of the lid (3).



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-1-

#### DRINKING VESSEL

This invention relates to liquid dispensers generally, and specifically, though not exclusively, to feeder cups for use by babies, invalids or handicapped persons.

5 A known type of feeder cup for babies has a lid with an integral spout. A baby is able to drink from the cup by sucking on the spout but normally the spout is so designed that the baby is prevented from taking up too much liquid at a time, or from spilling a substantial quantity of the contents of the cup, by ensuring that the flow through the spout is restricted.

10 It is often desirable for such a cup to be carried about whilst filled with liquid, but this can present problems since the liquid has a tendency to leak out of the spout. Whilst the lid having the integral spout could be replaced by an alternative form of lid which does not allow leakage when the cup is being carried, the use of such an alternative lid is inconvenient, particularly if the baby is to be allowed to feed at frequent intervals since this will necessitate a frequent change of lids.

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It is an object of the invention to provide a feeder cup or other liquid dispenser which may be carried about without risk of leakage of its contents

-2-

and without requiring replacement of a lid by an alternative form of lid.

According to the invention there is provided a liquid dispenser comprising a container for a liquid,

5 an outlet member fitted to the container by means of which liquid may be withdrawn from the container, and flow control means which, when in an open position, allows liquid to be withdrawn from the container through the outlet member and, when in a closed position,

10 prevents liquid from being withdrawn from the container through the outlet member. The liquid dispenser may be used for a variety of purposes to enable liquid to be dispensed from bottles, containers etc. when required but it is particularly suited for use as a feeding cup for

15 infants. In this case the outlet member will be a spout provided with at least one outlet hole.

If the flow control means is placed in the closed position, leakage from a filled or partly filled cup is thereby prevented whilst the cup is being carried.

20 When the baby is to be allowed to drink from the cup, the flow control means is simply placed in the open position and the baby may then drink from the cup by sucking on the spout.

In a preferred embodiment of the invention the

25 flow control means is moved between its open and closed positions by rotating an upper cup part relative to a

-3-

lower cup part. This makes it very easy for an adult to operate the flow control means, but helps to prevent the flow control means from being operated accidentally or from being operated by a baby. The upper cup part is 5 preferably a lid which is removable to enable the cup to be filled with liquid, and the spout or other outlet member is preferably integral with the lid.

The flow control means may comprise two control surfaces which are spaced apart in the open position 10 and engage one another in the closed position, at least one aperture for the supply of liquid to the outlet member opening on at least one of the control surfaces and being closed off when the two control surfaces engage one another in the closed position. Ideally the control 15 surfaces are designed to cause progressive uncovering of the aperture to provide a variable output during operation of the flow control means. At least one of the control surfaces may be in the form of a ramp surface, the two surfaces being moved together and apart by 20 rotating an upper cup part relative to a lower cup part. It is preferred that the ramp surface should be of helical form. As the ramp surfaces slide over one another the adjoining planes give positive sealing, particularly in the closed position.

25 Conveniently one of the control surfaces is provided on a removable lid, and the other control

-4-

- surface is provided on the remainder of the cup, so that the two surfaces are opposite one another when the lid is in position. It is preferred that the lid and the remainder of the cup should interconnect by 5 means of a locating post engaging within a slot when the lid is in position, so as to locate the two control surfaces opposite one another and allow relative movement therebetween. Ideally the slot and post surfaces will be shaped such that rotation of the lid 10 in one direction causes the post to abut a stop surface of the slot, whilst rotation of the lid in the other direction causes the post to ride up a ramp surface of the slot so as to assist in lifting the lid away from the remainder of the cup.
- 15 The control surface which is not on the lid may be located on a removable plate fitted to the top of the container for the liquid. This plate may then be removed when it is required to fill the container with liquid. The removable plate may also include 20 one or more apertures extending therethrough for the passage of liquid through the plate towards the spout. The removable plate and the container preferably include means for locating the plate at a defined orientation with respect to the container.
- 25 The removable plate may incorporate a drainage hole for draining liquid back into the container and the

-5-

lid includes a cover portion for sealing off the drainage hole when in the closed position. The upper face of the lid can be dished to direct liquid towards the drainage hole.

5       The invention may be performed in various ways and a preferred embodiment thereof will now be described, with reference to the accompanying drawings, in which:-

Figure 1 is a vertical cross-section through a diametral plane of the feeder cup of this invention;

10      Figure 2 is an exploded sectional view of the parts shown in Figure 1;

Figure 3 is a top plan view of an orifice plate of the cup;

15      Figure 4 is an underneath plan view of a lid of the cup;

Figure 5 is a top plan view of the lid; and

Figure 6 is a side view of the lid.

The feeder cup as illustrated particularly in Figures 1 and 2 is made from a plastics material and 20 comprises three separate moulded pieces, namely a liquid container 1, an orifice plate 2 and a swivel lid 3. The container 1 is cup-shaped having a dished base 4 and generally tapering side wall 5. An annular rib 5A is formed towards the top of the side wall 5 25 and a rectangular cutout 7 is also formed in the top edge (see Figure 2).

-6-

The orifice plate 2 (as shown particularly in Figures 2 and 3) fits within the top of the liquid container 1 and rests thereon by means of an annularly projecting rib 6. It is held in a precise orientation 5 with respect of the container 1 by means of a downward extension 8 of the rib 6 which fits within the cutout 7. An outlet hole 9 passes through the plate 2 and there is also a drainage hole 10 which passes through part 10 of a central dished area 11 of the plate 2. Liquid resting on the top surface of the plate 2 will tend to collect in the dished central area 11 and then drain back into the container 1 through a drainage hole 10 when the cup is in an upright position. A slot 12 is formed in the upper surface of the lid and has a stop 15 wall 13 at one end and a ramp surface 14 at the other end. A closure member 15 projects outwardly from the plate 2 and defines a top surface which rises helically from one end 15A to the other 15B of the closure member 15.

20. The lid 3 (as illustrated particularly in Figures 2, 4, 5 and 6) is formed with a spout 16 provided with a number of outlet apertures 17. The inner end of the spout 16 is surrounded by a surface of a second closure member 18; this is again of helical form and projects 25 downwardly to an extent which increases from the one end 18A to the other end 18B. The end 18A is at the

-7-

end of an extension portion 18C of the closure member. A portion of the plastic may be omitted, as indicated at 19, in order to reduce possible shrinkage problems during the moulding process. An additional extension 5 18D of the closure member 18 incorporates a blanking member 20.

The lid 3 fits over the container 1 and snaps in place when an annular groove 21 fits over the rib 5A of side wall 5 of the container 1. The lid 3 also 10 carries a downwardly projecting stop member 22, the one side of which defines a ramp surface 23. This stop member 22 fits into the slot 12 in the plate 2 and limits the rotation of the lid in one direction when the stop 22 hits the end wall 13 of the slot 12. A 15 rotation in the other direction, however, causes the ramp surface 23 to ride up the ramp surface 14 and thus tend to force the lid 3 upwardly until the groove 21 snaps out of the rib 5A to enable the lid 3 to be removed from the container 1. When the cup is fully 20 assembled and the spout 16 is centralised over the closure member 15 the helical surfaces of the two closure members 15 and 18 are tightly engaged with one another so that the mouth of the spout 16 is shut off by the surface of the closure member 15 and the extension part 18C of 25 the closure member 18 additionally closes off the opening 9 in the plate 2. Furthermore the blanking

-8-

member 20 forms a tight seal over the drainage outlet 10. Hence no liquid can escape from the container through the spout 16. As the lid 3 is rotated the helical surface of the extension portion 18C of the 5 closure member 18 will start to lift away from the opening 9 and will partially uncover that opening. Also the mouth of the spout 16 will start to lift away from the helical surface of the closure member 15 until there will be a direct path from the interior of the 10 container 1 through the opening 9 into the spout 16. During initial stages of rotation of the lid 3 a progressive opening will be achieved so that the cup can have a variable output until the fully opened condition is reached. Rotation of the lid 3 also 15 causes the blanking member 20 to uncover the drainage hole 10.

-9-

CLAIMS

1. A liquid dispenser comprising a container for a liquid and an outlet member fitted to the container by means of which liquid may be withdrawn from the container, characterised by flow control means (15, 18) which, when in an open position, allows liquid to be withdrawn from the container (1) through the outlet member (16) and, when in a closed position, prevents liquid from being withdrawn from the container through the outlet member, which is preferably in the form of 10 a spout (16) with at least one outlet hole (17).

2. A liquid dispenser according to claim 1, further characterised in that the flow control means (15, 18) is moved between its open and closed positions by rotating an upper cup part (3) relative to a lower 15 cup part (2), and preferably the upper cup part (3) is a lid which is removable to enable the cup to be filled with liquid and which may be integral with the outlet member (16).

3. A liquid dispenser according to claim 1 or 20 claim 2, further characterised in that the flow control means (15, 18) comprises two control surfaces which are spaced apart in the open position and engage one another in the closed position, at least one aperture (9), for the supply of liquid to the outlet member (16), 25 opening on at least one of the control surfaces and

-10-

being closed off when the two control surfaces (15, 18) engage one another in the closed position, at least one of the control surfaces (15, 18) preferably being in the form of a ramp surface, ideally of helical form, the

5. two surfaces being moved together and apart by rotating an upper cup part (3) relative to a lower cup part (2).

4. A liquid dispenser according to claim 3, further characterised in that the control surfaces (15, 18) are designed to cause progressive uncovering of the 10 aperture (9) to provide a variable output during operation of the flow control means.

5. A liquid dispenser according to claim 3 or claim 4, further characterised in that one of the control surfaces (18) is provided on a removable lid (3), 15 and the other control surface (15) is provided on the remainder of the cup (2), so that the two surfaces are opposite one another when the lid (3) is in position, the lid (3) and the remainder of the cup (2) preferably interconnecting by means of a locating post (22) engaging 20 within a slot (12) when the lid (3) is in position, so as to locate the two control surfaces (15, 18) opposite one another and allow relative movement therebetween, the slot (12) and post (22) surfaces ideally being shaped such that rotation of the lid (3) in one direction causes 25 the post (22) to abut a stop surface (13) of the slot, whilst rotation of the lid (3) in the other direction causes the post (22) to ride up a ramp surface (14) of

-11-

the slot so as to assist in lifting the lid (3) away from the remainder of the cup (2).

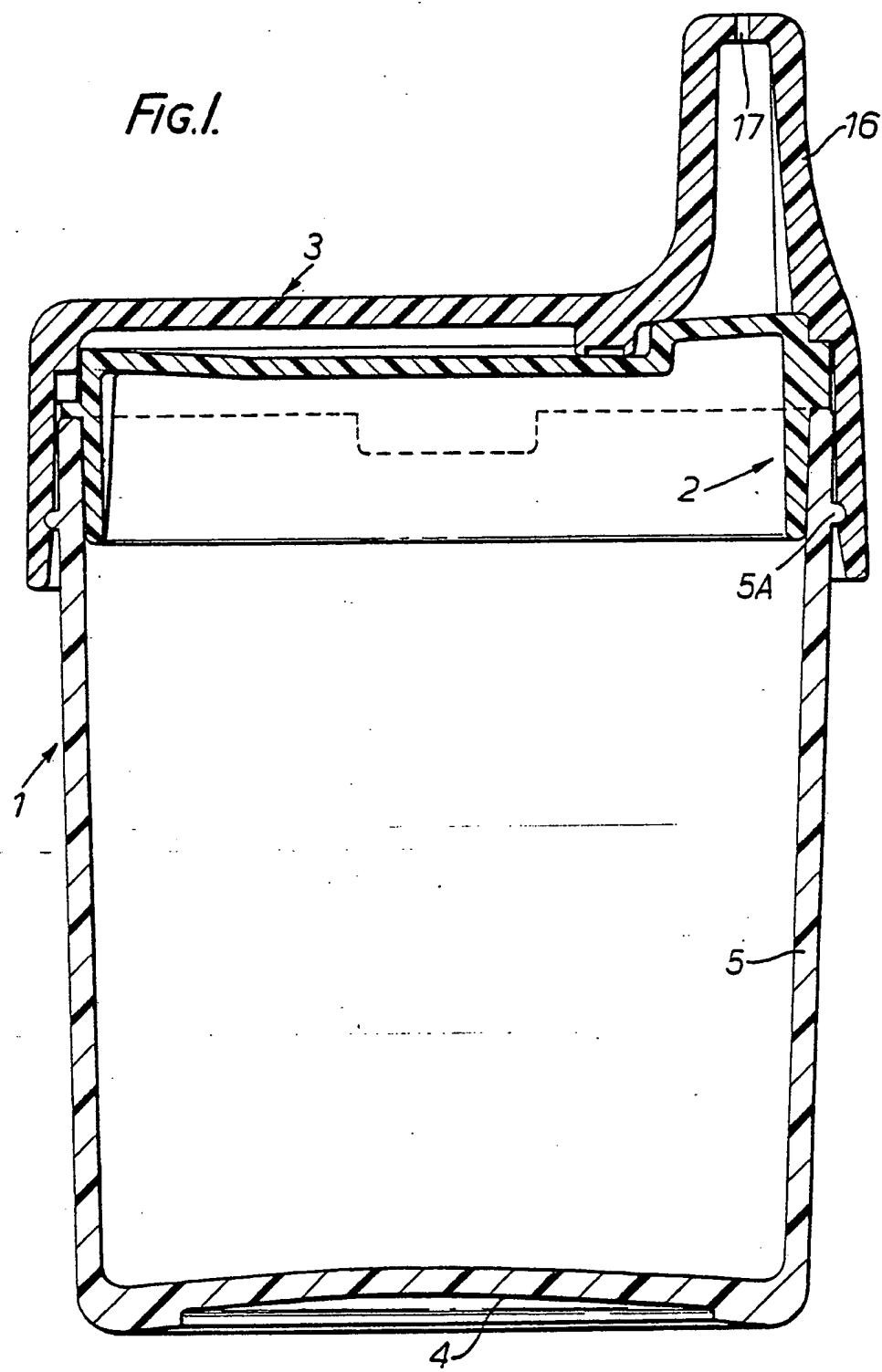
6. A liquid dispenser according to claim 5, further characterised in that the control surface (15) which is not on the lid (3) is located on a removable plate (2) fitted to the top of the container (1) for the liquid, the removable plate (2) preferably also including at least one aperture (9) extending therethrough for the passage of liquid through the plate (2) towards the outlet member (16), the removable plate 10 and the container (1) ideally including means (8, 7) for locating the plate (2) at a defined orientation with respect to the container (1).

7. A liquid dispenser according to claim 6, wherein the removable plate (2) incorporates a drainage 15 hole (10) for draining liquid back into the container (1) and the lid (3) includes a cover portion (20) for sealing off the drainage hole (10) when in the closed position, the upper face (11) of the lid preferably being dished to direct liquid towards the drainage 20 hole (10).

8. A liquid dispenser substantially as herein described with reference to the accompanying drawings.

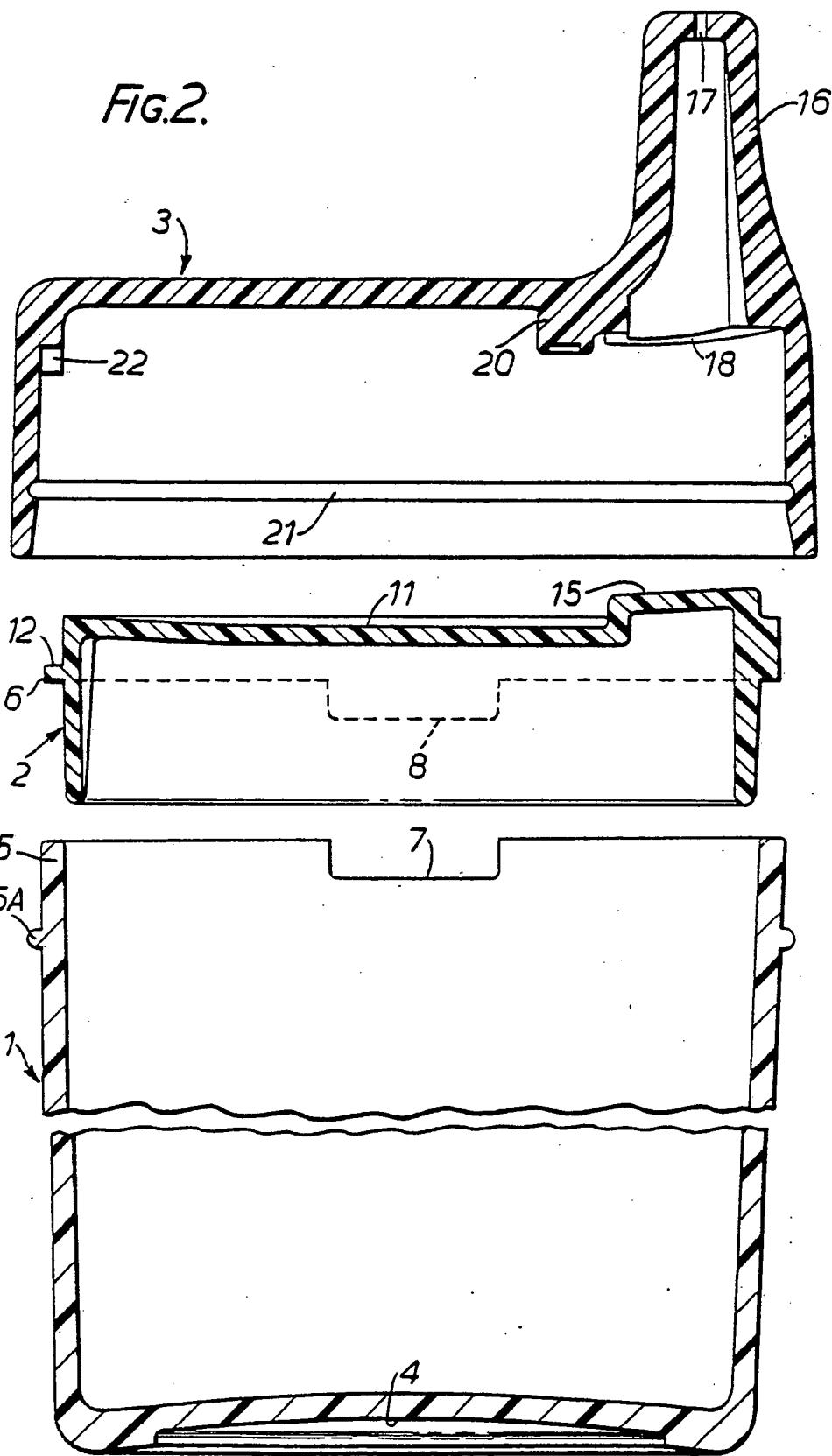
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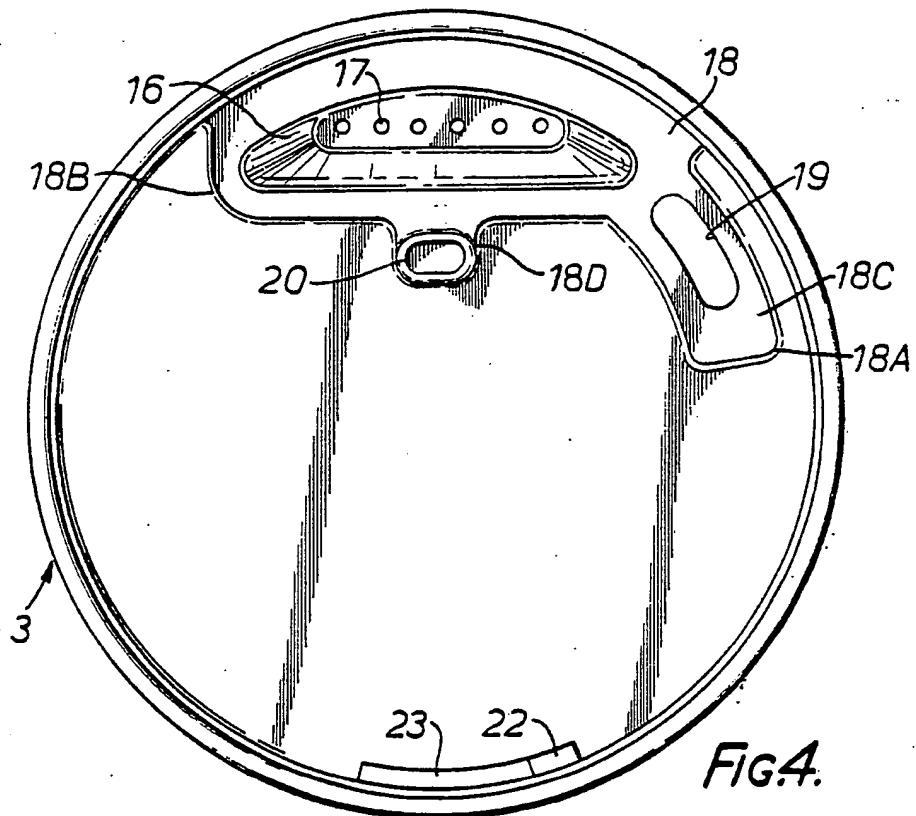
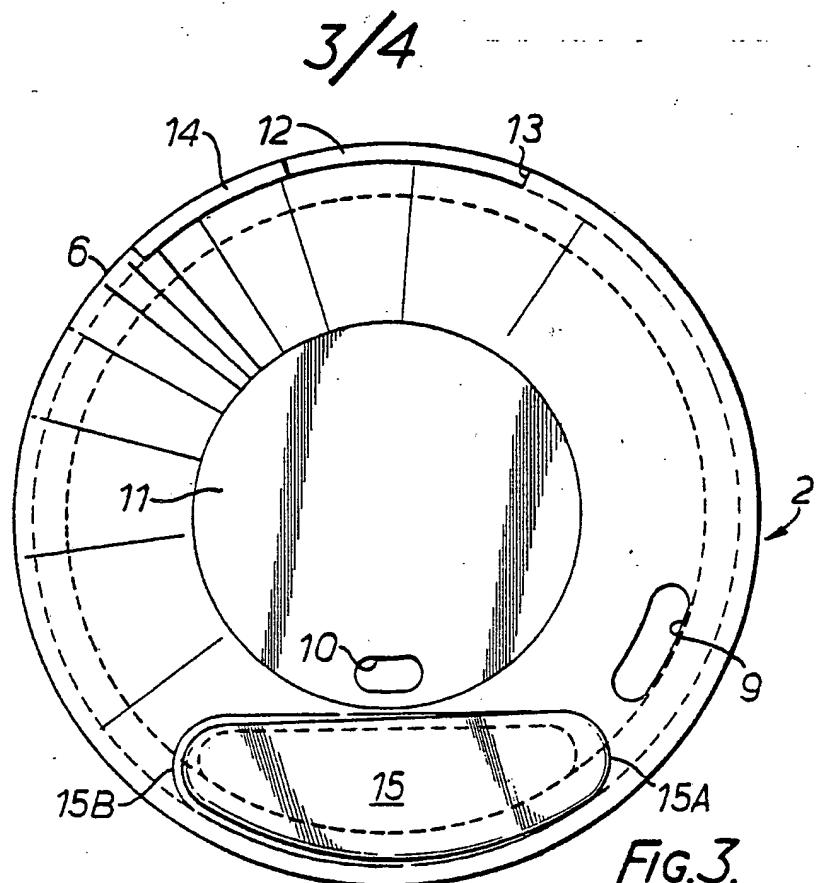
FIG. I.



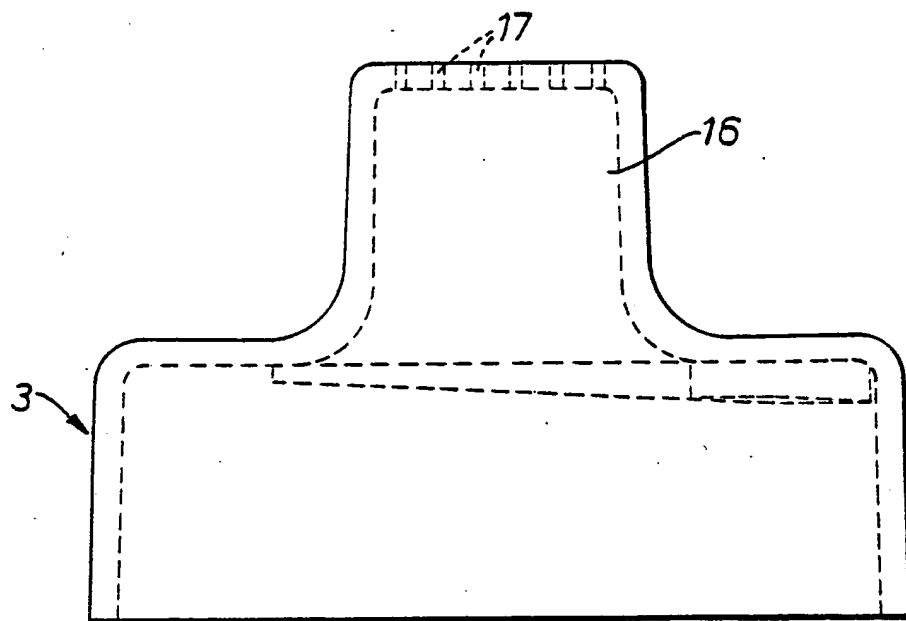
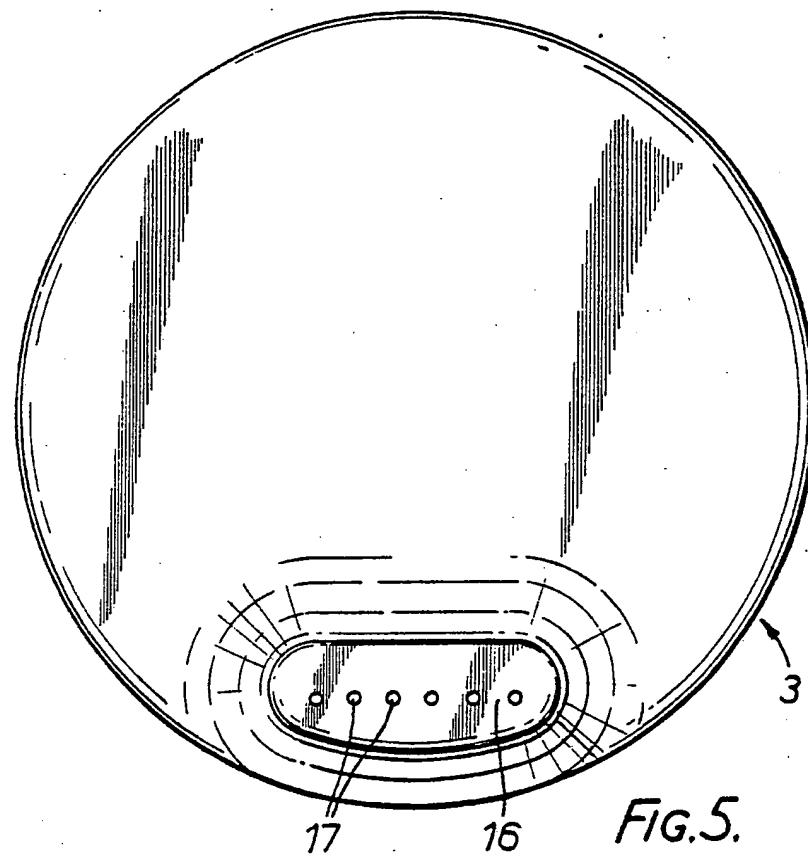
2/4

FIG.2.





4/4



# INTERNATIONAL SEARCH REPORT

International Application No. PCT/GB 85/00098

## I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) <sup>6</sup>

According to International Patent Classification (IPC) or to both National Classification and IPC

IPC<sup>4</sup>: A 47 G 19/22

## II. FIELDS SEARCHED

Minimum Documentation Searched <sup>7</sup>

Classification System	Classification Symbols
IPC <sup>4</sup>	A 47 G; B 65 D

Documentation Searched other than Minimum Documentation  
to the Extent that such Documents are Included in the Fields Searched <sup>8</sup>

## III. DOCUMENTS CONSIDERED TO BE RELEVANT<sup>9</sup>

Category <sup>10</sup>	Citation of Document, <sup>11</sup> with indication, where appropriate, of the relevant passages <sup>12</sup>	Relevant to Claim No. <sup>13</sup>
X	US, A, 3104039 (DIKE) 17 September 1963 see column 2, line 48 - column 7, line 3; claims; figures	1,2,8
A		3,4,7
Y	--	5,6
Y	AU, A, 40568/68 (CUSTOM MOULDERS) 18 February 1971 see page 4, paragraph 5; page 6, last paragraph; claims; figures	5,6
Y	--	
Y	US, A, 4190173 (MASON et al.) 26 February 1980 see column 2, line 65 - column 5, line 57; figures 1-10	1-8
Y	--	
FR	FR, A, 1013885 (BERTIN) 5 August 1952 see page 1, left-hand column, paragraph 8 - page 2, left-hand column, line 2; abstract; figures	1-8
	--	./.

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## IV. CERTIFICATION

Date of the Actual Completion of the International Search  
12th June 1985

Date of Mailing of this International Search Report

27 JUIN 1985

International Searching Authority

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Signature of Authorized Officer

G.L.M. Kluwdenberg

III. DOCUMENTS CONSIDERED TO BE RELEVANT (CONTINUED FROM THE SECOND SHEET)		
Category *	Citation of Document, with indication, where appropriate, of the relevant passages	Relevant to Claim No
X	GB, A, 2030121 (L.P.A.) 2 April 1980 see page 2, lines 35-56; figures 5,6	1,2,8
A	---	3-7
X	US, A, 3739938 (PAZ) 19 June 1973 see column 1, line 31 - column 2, line 27; claims; figures	1,8
A	---	3-7
X	US, A, 4121731 (OKERSTRUM) 24 October 1978 see column 2, line 32 - column 3, line 2; claims; figures	1,8
A	---	3-7
X	US, A, 2608841 (RICE) 2 September 1952 see column 1, line 40 - column 3, line 14; claims; figures	1,8
A	---	3-7
X	US, A, 4083467 (MULLINS et al.) 11 April 1978 see column 2, line 26 - column 3, line 58; claims; figures	1,2,8
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P,X	US, A, 4437576 (BARNIAK) 20 March 1984 see column 2, line 37 - column 4, line 28; claims; figures	1,2,8
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A	FR, A, 1437341 (TURNWALD) 21 March 1966	
A	---	
	US, A, 3412892 (WAKSMAN et al.) 26 November 1968	
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A	---	
	US, A, 3653559 (DREPS et al.) 4 April 1972	
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	US, A, 2970724 (LACY) 7 February 1961	
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ANNEX TO THE INTERNATIONAL SEARCH REPORT ON

INTERNATIONAL APPLICATION NO. PCT/GB 8500098 (SA 8957)

This Annex lists the patent family members relating to the patent documents cited in the above-mentioned international search report. The members are as contained in the European Patent Office EDP file on 19/06/85

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US-A- 3104039		None	
AU-A- 4056868		None	
US-A- 4190173	26/02/80	GB-A- 1604557 CA-A- 1117486	09/12/81 02/02/82
FR-A- 1013885		None	
GB-A- 2030121	02/04/80	FR-A, B 2437355 DE-A- 2937393 JP-A- 55048067 CH-A- 632462	25/04/80 03/04/80 05/04/80 15/10/82
US-A- 3739938	19/06/73	None	
US-A- 4121731	24/10/78	None	
US-A- 2608841		None	
US-A- 4083467	11/04/78	None	
US-A- 4437576	20/03/84	None	
FR-A- 1437341		None	
US-A- 3412892		None	
FR-A- 786939		None	
US-A- 3653559	04/04/72	None	
US-A- 2970724		None	